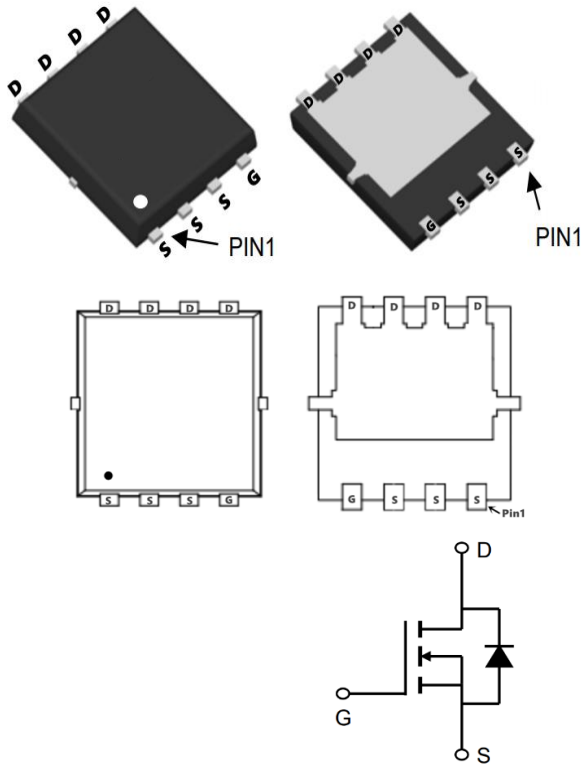
CTK80N03DF5

30V N-Channel Enhancement Mode MOSFET

PDFN5*6-8L



General Features

V_{DS} = 30V I_D =80A

$R_{DS(ON)}$ < 5.1mΩ @ V_{GS}=10V （**Type：4.6mΩ**）

Application

Battery protection

Load switch

Uninterruptible power supply

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
CTK80N03DF5	PDFN5*6-8L	CTK80N03DF5	5000PCS

Absolute Maximum Ratings@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Value	Unit
VDS	Drain source voltage	30	V
VGS	Gate source voltage	±20	V
I_D@T_C=25℃	Continuous drain current[1)]	80	A
I_D@T_C=100℃	Continuous drain current[1)]	64	A
IDM	Pulsed drain current[2)]	210	A
IAS	Diode forward current	32	A
P_D@T_C=25℃	Power dissipation	87	W
EAS	Single pulsed avalanche energy)	87	mJ
Tstg，Tj	Operation and storage temperature	-55 to 150	℃
RθJC	Thermal resistance, junction-case	1.44	℃/W
RθJA	Thermal resistance, junction-ambient[4)]	62	℃/W

Electrical Characteristics (T_J=25℃, unless otherwise noted)

Symbol	Parameter	Test condition	Min.	Typ.	Max	Unit
BVDSS	Drain-source breakdown voltage	V_{GS}=0 V, I_D=250 μA	30	33		V
VGS(th)	Gate threshold voltage	V_{DS}=V_{GS}, I_D=250 μA	1.1	1.4	2.0	V
RDS(ON)	Drain-source on-state resistance	V_{GS}=10 V, I_D=20 A		4.6	5.1	mΩ
RDS(ON)	Drain-source on-state resistance	V_{GS}=4.5 V, I_D=15 A		6.8	7.8	mΩ
IGSS	Gate-source leakage current	V_{GS}=±20 V			±100	nA
IDSS	Drain-source leakage current	V_{DS}=30 V, V_{GS}=0 V			1	μA
Rg	Gate Resistance	f=1MHz		6.8		Ω
Ciss	Input capacitance	V_{GS}=0 V, V_{DS}=15 V, f=1MHz		1598		pF
Coss	Output capacitance			267		pF
Crss	Reverse transfer capacitance			182		pF
td(on)	Turn-on delay time	V_{GS}=10 V, V_{DS}=15 V, R_G=2 Ω, I_D=25 A		22.9		ns
t_r	Rise time			6.5		ns
td(off)	Turn-off delay time			45.7		ns
t_f	Fall time			20.4		ns
Q_g	Total gate charge	I_D=25 A, V_{DS}=15 V, V_{GS}=10 V		30		nC
Q_{gs}	Gate-source charge			5.8		nC
Qgd	Gate-drain charge			6.1		nC
Vplateau	Gate plateau voltage			3.6		V
VSD	Diode forward voltage	I_S=20 A, V_{GS}=0 V			1.2	V
trr	Reverse recovery time	I_S=25A, di/dt=100 A/μs		50.3		ns
Q_{rr}	Reverse recovery charge			45.1		nC
Irrm	Peak reverse recovery current			1.5		A

Note :

1、The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.

2、The data tested by pulsed , pulse width .The EAS data shows Max. rating .

3、The power dissipation is limited by 150℃ junction temperature

4、EAS condition: TJ=25℃, V_{DD}=24V,V_{GS}=10V,L=0.1Mh,I_{AS}=32A

5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

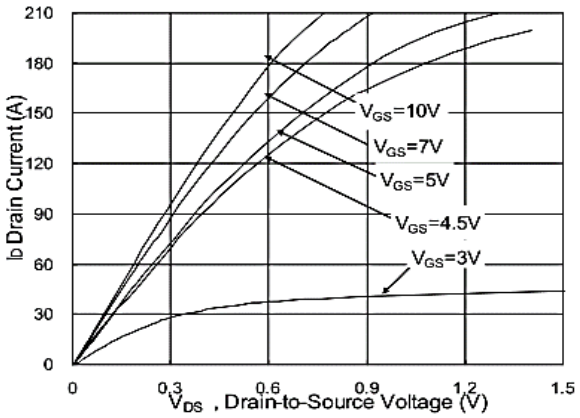


Fig.1 Typical Output Characteristics

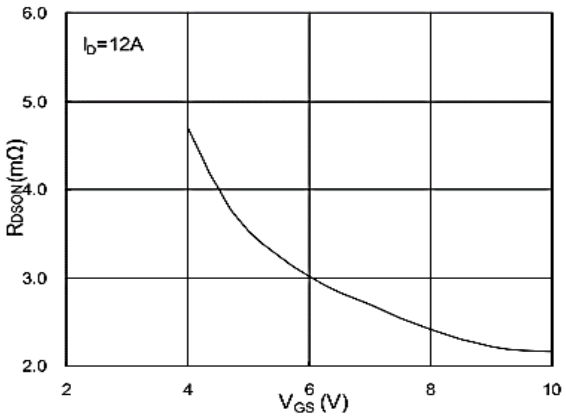


Fig.2 On-Resistance vs. G-S Voltage

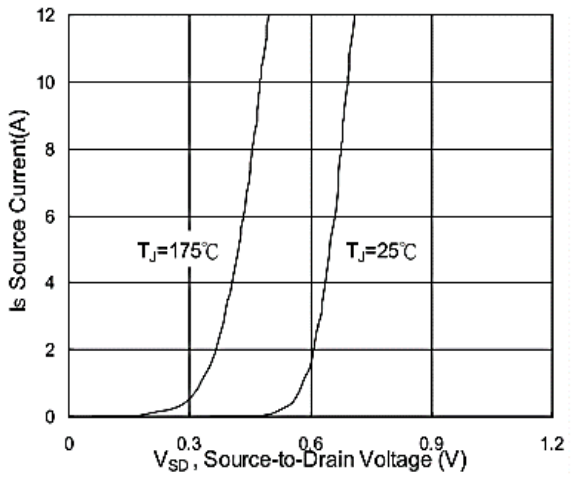


Fig.3 Forward Characteristics of Reverse

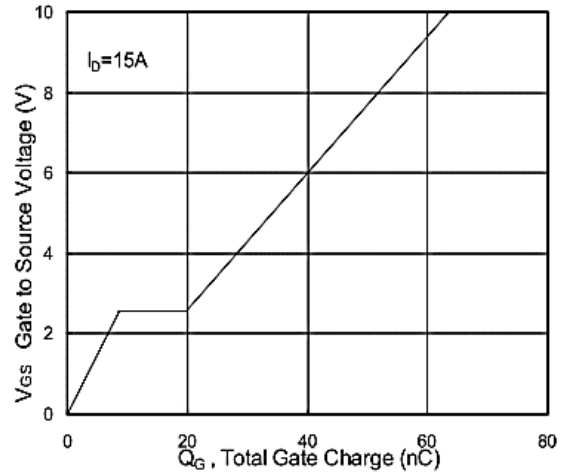


Fig.4 Gate-Charge Characteristics

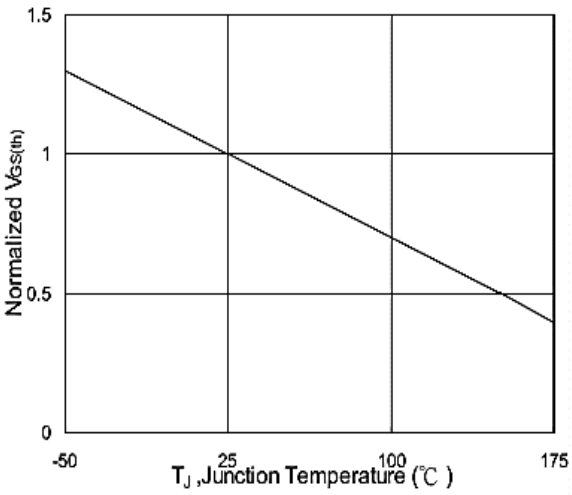


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

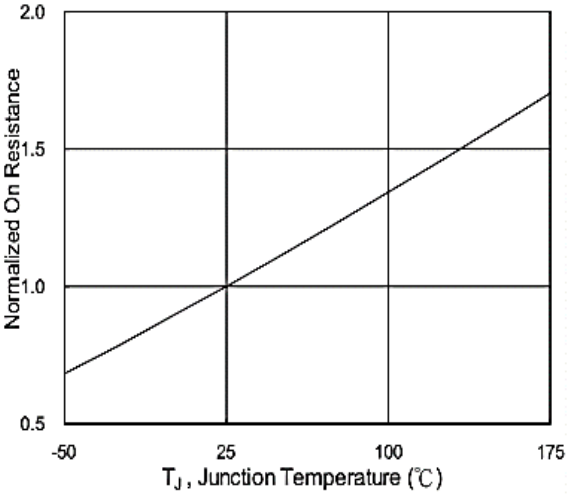


Fig.6 Normalized R_{DSON} vs. T_J

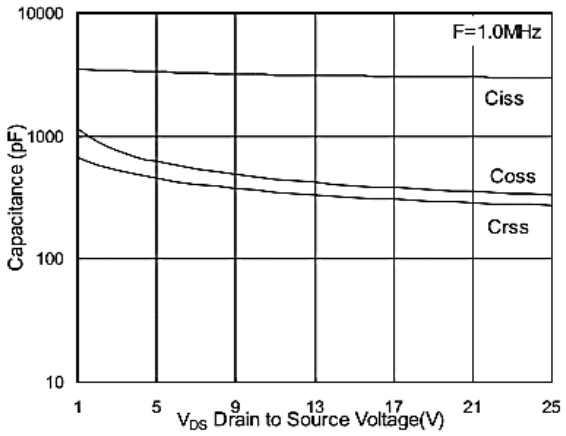


Fig.7 Capacitance

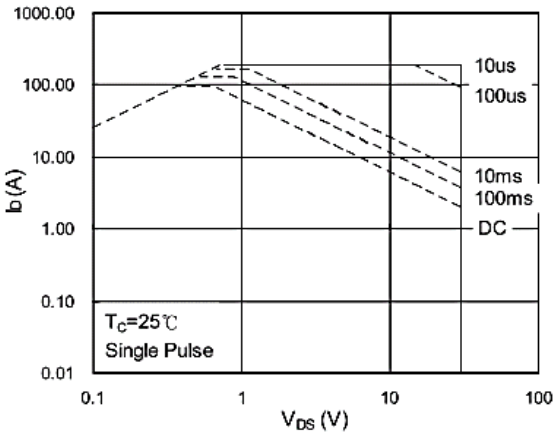


Fig.8 Safe Operating Area

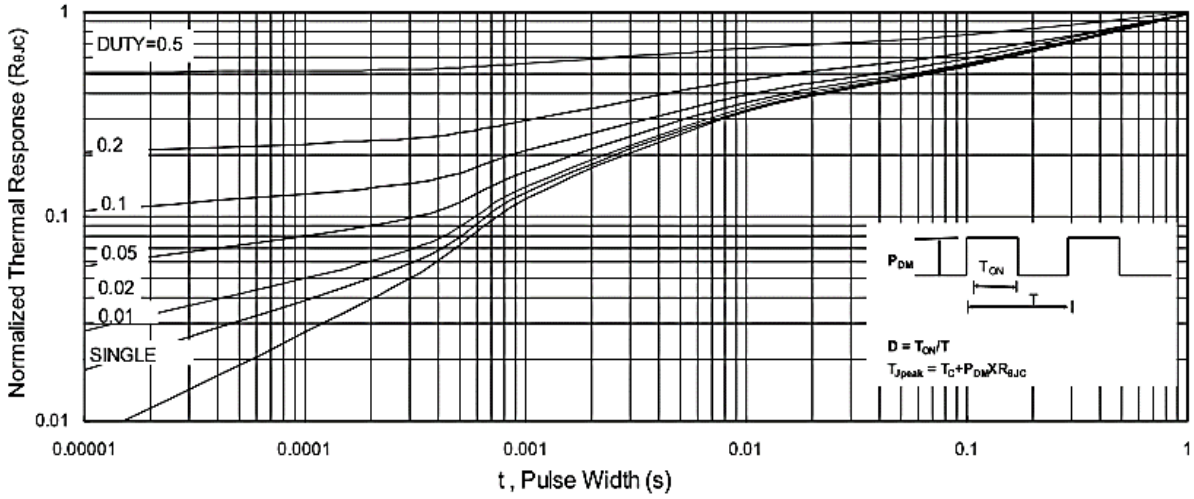


Fig.9 Normalized Maximum Transient Thermal Impedance

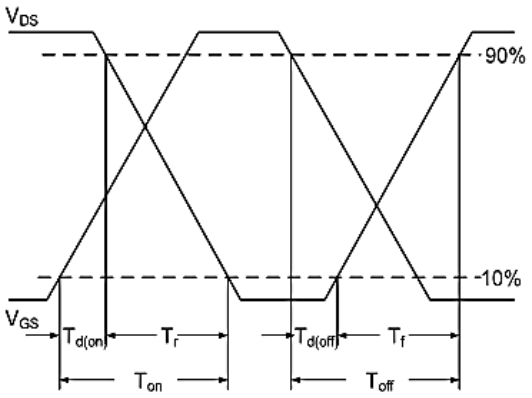


Fig.10 Switching Time Waveform

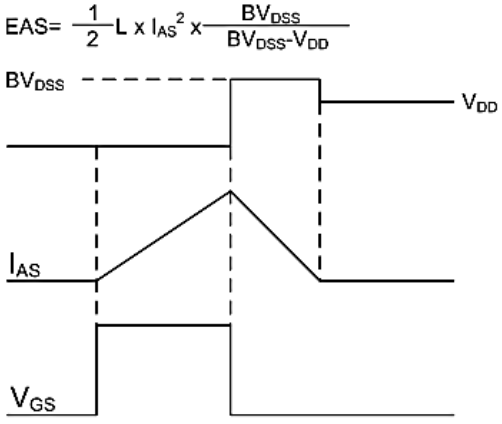
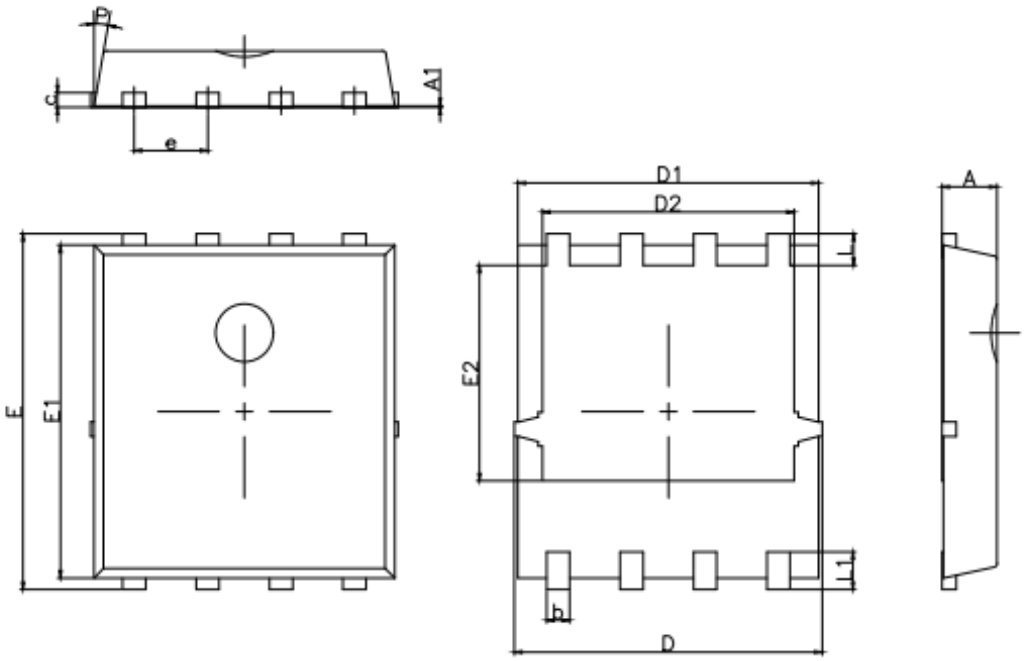


Fig.11 Unclamped Inductive Switching Waveform

Package Mechanical Data-PDFN5*6-8L



DIM.	MILLIMETER		
	MIN.	TYP.	MAX.
A	0.9	0.95	1.2
A1	0	0.025	0.05
b	0.26	0.4	0.54
c	0.15	0.25	0.35
D	5.0	5.3	5.45
D1	4.95	5.15	5.35
D2	4.0	4.35	4.5
E	6.05	6.15	6.25
E1	5.7	5.75	6.1
E2	3.4	3.7	3.8
e		1.27	
L	0.45	0.55	0.65
L1	0.45	0.6	0.7
P	8°	10°	12°